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The Canadian Transportation Statistical System in light of the rapidly changing environment - A Statistician's Perspective

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1.0 Abstract

In general, it is the characteristics of an industry which play a major role in the organization, collection, analysis and production of statistics which describe the industry. Transport industries have entered into a phase during which major changes will occur as the structure of the industries shifts away from a regulatory to a more competitive environment; as the newly developed technologies are implemented and as new transportation and trade policies are formulated.

The Transportation Division of Statistics Canada is responsible for the management of a significant portion of the Transportation Statistical System in Canada. Its data bases include information on the economic performance of the transportation industries and on the movement of commodities and passengers by mode.

This paper presents and analyses scenarios which will have an impact on that part of the Transportation Statistical System which is managed by Statistics Canada. More specifically, this paper:

(i) presents scenarios and describes the nature of the changes and the direction which may influence the future statistical system. Included in this section are descriptions of changes to the mix of the data, shifts in demand towards more international data and more comprehensive, comparable and integrated traffic data;

(ii) analyses the scenarios to provide suggestions on how the structural, technological and policy changes can be measured statistically. Principal among the measurement tools are common definitions across all modes and greater utilization of machine readable data;

(iii) outlines some practical solutions to the major statistical issues.

2.0 Introduction

The Transportation Statistical System in Canada has evolved to its present state as the result of the demands placed upon it from its users. These users are interested in the System of National Accounts and regulatory types of statistics. The statistical system is maintained centrally, is organized along modal lines, is composed of a set of variables which are comprehensive and which are integrated among modes. It has achieved this state will considerable assistance from the Canadian Transport Commission and Transport Canada.

The purpose of this paper is to describe the statistical system as it exists today and to describe the forces of change, both regulatory and economic, which it faces in the immediate future. An analysis of these issues is presented with a view to describing the statistical system which will result after the forces of change are spent. The paper concludes with suggestions regarding the statistical system in the longer term.

3.0 The Present Transportation Statistical System

The present statistical system as developed and implemented by the Transportation Division of Statistics Canada was influenced by many factors; the most important of which are the existence of dual frameworks and associated legislative instruments.

3.1 Dual Frameworks

In order to maximize the utility of statistics, it is essential to develop, collect, process and compile statistics within an integrated framework using standard units, concepts, classifications and definitions. Statistics developed using such a framework can be related to the economy and to the various modes of transport.

The present statistical system is based upon dual frameworks, namely a fully integrated and conceptually well defined System of National Accounts and a less well defined regulatory framework.

The conceptual framework of the System of National Accounts (SNA) has its origin in economic theory. The central concepts of production, income, consumption, and capital formation are all fundamental concepts of economics. The translation of these concepts into a system of economic statistics which describe and explain the functioning of the economy is the principal objective of the SNA.

The concepts for the regulatory framework are not as well defined as the SNA; however, it is generally accepted that the major demand under a framework for transportation statistics involves the measurement of people and commodities on an Origin-and-Destination basis. In addition, capacity utilization statistics, performance data and detailed costing and pricing data are required.

Within each mode of transport, the measurement of these variables is performed under a framework which is characterized by a unique set of definitions, concepts, classifications and statistical units. The uniqueness of this framework is further determined by the output characteristics of the transport industries: the directional nature of the service, the non-storability of the productive capacity and the dichotomy between the production unit and the consumption unit.

The existence of these two frameworks and their relative influence on each mode of transport determines not only the amount and type of information to be obtained from what unit, but also the degree to which individual data can be released and to whom.

In the statistical system, the reporting unit differs according to the relative importance of the use of the framework. The reporting unit in the air and rail modes is the regulated entity defined by the respective regulatory authority, while in the trucking, bus and marine modes, the reporting unit is defined by the statistical structure of the SNA. This results in the inability of direct comparison of reporting structures, and their economic characteristics, between modes. Even within the regulatory system, direct comparison becomes impossible because the regulations change between provinces (and territories) and from year to year.

The amount of detail collected from a respondent depends on the framework under which the data are collected. As a general rule, data collected under a regulatory framework tend to be micro in nature while SNA data are, in comparison, macro in nature.

Information collected for the purposes of the SNA are economic statistics. They are used as inputs to national aggregates such as the Gross National Product (GNP) and the Gross Domestic Product (GDP). The information collected are estimates of the value of gross output and the associated inputs such as capital, labour and purchased goods and services. On the other hand, data collected for regulatory purposes include traffic data, service utilization statistics, detailed costing information, infrastructure utilization information and pricing. The emphasis is on micro detail and reliability.

The methods of data collection vary to meet the needs of the framework being served. The SNA can be satisfied by using any one or a combination of collection methodologies ranging from complete enumeration to sampling and the use of administrative data. In addition, because of the uses to which the data are put, estimation and imputation for missing or invalid information are acceptable. Under the regulatory framework, the data are required to be very precise; a precision which in most cases precludes the use of sampling and the use of imputation techniques. Data at the level of unit of observation must be capable of receiving an accounting certificate.

The regulator defines what is to be reported, when it is to be reported and in what format it is to be reported. Uniform accounting systems are often required. Under the SNA, uniformity is not easily achieved because the industries which are being measured are invariably heterogeneous. Complete data for the ultimate reporting unit in many instances do not exist. This permits estimation of values to describe the industry by the respondent or by the statistician. The result is that there is a consistency from industry to industry (mode to mode) but not from firm to firm.

In summary, the SNA measures the contribution of each industry to the national total. This requires standard principles, definitions, concepts and a framework which describes the whole economy. In contrast, the regulatory framework concerns itself with the individual transportation issues first, all other issues are secondary. It can also assign different measures of importance to individual modes depending on policy considerations.

The statistical system can operate under the dual frameworks without being inconsistent or contradictory. However, to do so requires that the statistician devote more effort to reconciliation, analysis and interpretation of the data.

3.2 Legal Instruments

Further complications are added to the transportation statistical system because the data are collected under a diverse set of legal instruments. The use of these instruments and their relative strengths and weaknesses influences not only the response rates but also the quality of the data reported.

The Statistics Act

Prior to the passage of the first Statistics Act in 1918, data on transportation were collected under the authority of various acts, the most notable of which was the Railway Act. Policies governing the release of the data were the responsibility of the respective regulatory authority. In 1918, authority over the publication of transportation statistics was transferred to the newly formed Dominion Bureau of Statistics, which was renamed Statistics Canada in 1971.

As set down in the Statistics Act, data are to be made available to users within a reasonable period of time provided each release conforms to the guaranties of confidentiality. Within budgetary restrictions, Statistics Canada strives to meet the statistical needs of all levels of government and the private sector. In exercising this mandate, officials are always mindful that they are a service-oriented source of public information with the responsibility of protecting the interests of the suppliers of information.

However, in recognition of the unique and often monopolistic nature of large portions of the transportation industries, the Statistics Act gives to the Chief Statistician of Canada discretionary powers which permit the release of individual carrier data. Strict guidelines have been established regarding the use of such data.

The Statistics Act does not provide a uniform set of accounts for financial data which are specified by regulators. To ensure that the regulatory requirements are met, other acts are required.

The Aeronautics Act and the regulations associated with this Act are used to collect all air carrier information. In the regulations, the Aviation Statistics Centre of the Transportation Division of Statistics Canada is specifically named as the agent of the Air Transport Committee of the Canadian Transport Commission.

The Railway Act and the regulations associated with this Act are used to collect all information about federally regulated railways. Federally regulated railways are those which cross provincial or national boundaries. The Act requires all carriers to file certain information with the Railway Transport Committee of the Canadian Transport Commission and file a copy of this information with Statistics Canada.

The Customs Act is used to collect information on vessel and commodity movements to and from Canadian ports in international seaborne shipping.

Various administrative records such as air traffic control records, air carrier licensing records and provincial motor vehicle licensing records are also used to collect information. The above examples show that the use of administrative data is most prevalent in the air mode because Transport Canada plays an important role as the provider and the operator of an infrastructure.

The existence of these legal instruments, their relative application and the extent of the authority which underlies them, determines the nature, the amount, the accuracy and the response rate of the data collected.

4.0 Current Transportation Issues

The Transportation Statistical System has already been described as one which has evolved in response to external forces. The statistical system has remained relatively static over the past few years. It is no longer static. A set of issues has been presented which will have a serious impact on the future of the statistical system. In the paragraphs which follow, these issues are discussed under the following headings: government policies and regulations; economic forces in the market place; and technology. The discussion is centered on aspects of the issues which will have a major impact on the Transportation Statistical System.

4.1 Government Policies and Regulations

The issue which will have the most significant impact on the Transportation Statistical System is the degree of regulatory reform which is to be reflected in the proposed National Transportation Act. It is anticipated that it will be based on the 1985 White Paper, "Freedom to Move". At the time this conference paper was written, the details of the legislation were not known. However, there have been strong indications that major revisions to the National Transportation Act of 1967 are proposed.

Reduction of Entry and Exit Controls

There is a proposal that in aviation, entry to any class of domestic air services will be governed by the criteria of "fit, willing and able". This is expected to mean the carrier will need to satisfy safety regulations and submit proof of adequate insurance coverage. This relaxation to conditions of entry will result in an increase in the number of air carriers entering the market. Some increases have already been noted, particularly in the area of medium-sized carriers wishing to provide service to and from major centers.

The impact of such a change will be increases in the amount of traffic, and reductions to the stability of the number of carriers providing similar services. Only if these medium sized carriers participate in a survey of their services will the data base be able to reflect a complete picture of passenger markets. It is expected that adjustments to the statistical system will be required to account for structural changes.

In trucking, it is expected that the experience in the United States will be paralleled in this country. In the US, the number of carriers offering their services has almost doubled. Private carriers have sought to optimize their operations by looking for backhaul traffic which was previously the sole preserve of the for-hire carrier. In addition, a large number of industries have entered the market place to provide better services to their clients. These changes to the structure imply that the distinction between private and for-hire carriers may blur. This in turn will require adjustments to the industrial classifications in order that the revised structure will be correctly represented in the SNA.

Confidential Contracts

One proposed change will provide the Canadian railways with the right to enter into confidential contracts with shippers on both sides of the border. This will provide the Canadian railways with the same freedom as has been given to their US counterparts by the Staggers Act of 1980. If the experiences in the US are repeated in this country, there will be a shift in the market share from one mode to another, particularly for commodities which are currently transported by both trucking and rail. The impact on the statistical system is that there may be a loss in the geographic and commodity detail which is now obtained from the trucking industry, a loss which may not be matched with a corresponding increase in the detailed information available from the railway companies.

In the case of marine carriers, confidential contracts would be possible between shippers and members of shipping conferences. The contracts could be extended to become multi-modal by setting rates with the inland carriers. Competition between members of the same shipping conference would be fostered and might result in shifts from one mode of transportation to another or in an increase in cargo diversions from Canadian to U.S. ports and vise-versa. These structural changes would have to be examined and adjustments to the statistical system would result.

Collection of Regulatory Statistics

Explicit reference to a reduction in the amount of data required for economic regulation of the aviation industry is made in "Freedom To Move". The proposal is to reduce the filing of financial data items to those which would be justified by "safety, maintenance and planning" considerations. The result would be an obvious reduction in detailed information from that currently available.

Traffic data will continue to be required. Adjustments may have to be made to account for the problems of entry and exit that have been mentioned above. However it is not anticipated that these changes will require changes to the framework or to the statistical system.

As the process of regulatory reform continues in the direction towards less regulation, the importance of the uses of the SNA related data will increase. The SNA has a requirement for financial and operating data. This need will be satisfied in the future. It is not known at this time if the monitoring function's need for financial data can be satisfied from this data set.

4.2 Economic Forces in the Market Place

Economic forces are expected to play a role in the formulation of revisions to the Transportation Statistical System. The ones which are described below are those which may be isolated from the mix of economic forces and which may have characteristics that are measurable.

Mergers

Adjustment to the proposed reregulated environment is likely to involve a strategy of consolidations and mergers. Some of this activity has already been observed in aviation and trucking. In aviation, there is the example of Canadian Pacific Airlines' purchase of Eastern Provincial Airways and acquisition of a controlling interest in Nordair. These mergers will have an impact on the number of carriers who provide the services and the concentration of that service. Industry concentration and structure will change and will require adjustments to the statistical system to permit tracking of the changes.

Multi Modal Ownership

The Transportation Statistics System is currently independent of the question of form of ownership. However, there is an anomaly resulting from companies which currently define themselves to be multi-modal and which later decide that one mode is really an extension of another, at least from the viewpoint of statistical reporting. The statistical system is able to account for this anomaly, but only if the company does not change its philosophy. If the company either decides to view itself as operating in two or more separate modes or decides to divest itself of a set of companies which make up one of these modes, then the statistical system will be unable to react. Carriers who compete with such companies have voiced frustration with the situation. The result may be a restructuring of companies along strict modal lines, a change which will have a great impact on the structure of the data base.

Intermodal Competition

It is expected that with reregulation, there will be shifts in the choices that are made to ship goods. Competition will arise between modes. Rail and trucking companies will intensify their competition for commodities which can be carried by either of these modes. It is expected that modal choice will focus on the rates. As the shifts in modal choice occur, there will be parallel shifts (or distortions) to the statistical series because the two sets of information are collected using slightly different methodologies.

Modal Interdependence

Modal interdependence is a term which describes the activity of integrating diverse transportation networks. The integration of the network has the principle objective of providing a faster more efficient service to the client. Some evidence of this activity occurs in the emerging industry of the courier where the pickup and delivery capability of trucks is joined to the speed of the aircraft.

In the US, railroads and foreign shipping lines have started to modify their terminal facilities to adapt to the double stack container. In some cases, it is the steamship lines, not the railroads which have the responsibility for setting the rates and filling the containers. Similar grouping of modes can be seen with the transportation of passengers. VIA Rail uses buses in some markets to optimize its transportation network.

These operational solutions to problems of optimization of the movements of passengers and cargo are not wholly accounted for by present survey methodologies. New ways will have to be found to reflect the interdependencies and to account for the movement of passengers and goods by individual mode.

Foreign Carrier Competition

The reregulation of trucking has lead to the expectation of fierce competition from large American carriers. In the case of the railroads whose principal activity comes from their efficiency in the movement of bulk commodities, concern is being expressed that the US carriers will be able to

augment their transborder service by offering an East-West service using rail lines located entirely south of the border. Neither of the two frameworks currently has the capability to account for such activity; both will require adjustments.

Similar conceptual problems exist with the current practice of diverting Canadian cargo through US ports and US cargo through Canadian ports. The present transportation statistical system does not provide mechanisms to account for such activity. Estimates of this sort of activity are available only through US trade statistics. If in the future there is an increase in this activity made possible by reregulation, then fundamental changes to the concepts which underlie the system will be required.

Safety

It has been suggested that reregulation will result in carriers becoming more efficient, in both the operating and the financial sense, in order to remain competitive. Such activity might result in the carrier neglecting its obligations to respect safety requirements. To ensure that the safety regulations will continue to be respected, there will be a requirement to monitor the financial status of the carriers to seek signals that the carrier is entering a period where sacrifices may have to be made to ensure solvency.

In the past, the Transportation Statistical System has provided valuable information for the monitoring of safety in aviation. The challenge will be to maintain such an information base and to extend it to cover the other modes.

4.3 Technology

One final area worthy of note concerns reaction relative to technology. In aviation, shifts have already begun. Carriers have turned towards reconfiguration of their fleets. They have opted for aircraft fleets which are consistent and which are tailored to the markets served.

In trucking, it has been observed that the average age of vehicles has been increasing: an indication that new equipment was not being purchased. As these older vehicles are replaced by the newer models which are capable of achieving better fuel consumption, an impact on the rate structure and the services offered to clients is to be expected.

Railways too are looking to upgrade their equipment and their lines. Double tracking is becoming a reality in many parts of the country. Double-stack container trains are also being tested. Both of these changes are expected to impact on the freight rates.

None of these technological innovations will have a measurable impact on the SNA. However, there will be an impact on the detailed data collected, as the carriers expand their markets or change the type of service provided.

Computer technology will also have a large impact on the transportation industries. The technology will be used to improve their efficiency and productivity thereby permitting the carriers to become more competitive. More data will be captured in machine readable formats and will provide a large potential source of data for the Transportation Statistical System.

5.0 Statistical Issues

Survey statisticians have centered their professional activity around three fundamental concerns; timeliness, quality and response burden. Their quest to ensure that data are timely and of high quality has touched on the users and the suppliers of data alike. The result was that both users and suppliers of data took these issues as their own.

The question of response burden is relatively new. Governments have always assumed that they had a right to information which would permit analysis of their policies and the scope to monitor the impact of policy initiatives. Recently, the business community has demonstrated a reluctance to provide information because of its cost of production and their concern that individual data remain confidential.

The statistical agency, in response to the issue of response burden, has reacted by taking a combination of steps which range from the reduction of the frequency of response which is required, to the substitution of the data collected by data available through some administrative process. Reduction to the frequency of enquiry requires that the statistician examine the purposes to which the data are to be put. Consultations with the user community are initiated and solutions to the problems which will result from reducing the frequency of a survey are sought. In some cases, the solution can be found by selecting a representative sample from the same list of entities which had previously been used to obtain the full set of information. Alternatives to the sample, or to be used with the sample, include the reduction of information which is collected from any one entity.

Substitution of the data requires that a source of information be found which is as comprehensive as was the original survey. Under the purview of government, there is one source of information on business which satisfies this condition of comprehensiveness: income tax data. Tax data provides the statistician with a set of information which covers the same universe as does the survey. The problem is that the purpose underlying the collection of tax data differs from that of the collection of survey data. This difference manifests itself principally in the amount of detail and the scope of content. Tax data is one component of the total amount of information required to describe the economics of individual industries and the industrial composite. In addition, statisticians need the dimensions of industry, geography and activity, which are not present on tax forms. These requirements must be satisfied if the statistician is to fully execute the mandate: to provide industrially and geographically classified information to describe the country's economy.

Timeliness of the data is an issue which relates to the usefulness and currency of the information released. Regulators require that every piece of information be available before they are willing to release the information or use it as the basis for some policy. In this regard, their need for data which can be certified causes delays in the acquisition, the processing and the ultimate release of the data. In a regulated environment, the statistician must continually weigh the need to have quality data against the need to make the data available as early as possible. To date, solutions have been sought in the areas of speeding up the responses from the carrier and the development of computer systems which will accept carrier data in machine-readable formats and process the data faster than was previously possible.

The pursuit of quality underlies most of the activity of the statistician. Processes are designed and implemented to scrutinize the data to ensure that it is consistent internally, consistent with the information received from similar carriers and consistent with what was previously reported. Much time is spent in reviewing the results of these tests. Follow-up telephone calls are made to the respondent to determine if the data are accurate and if there has not been some inadvertent oversight. All of these activities are undertaken to ensure that the statistician's product, the data, is of high quality.

Also faced are issues associated with the methodologies of measurement. The issue is that the statistician must choose between alternative statistics which are designed to portray all or part of the change being measured. Choices lie between counts of entries and exits to and from the market in such a way that the final value represents movements due to the change and not to the usual market forces. Other measures such as industry profitability and financial ratios must also be scrutinized to ensure that they too reflect the change and not the market forces. To complicate the problem there is the question of how frequently the measurement should be taken, and over what period of time the event should be measured. The final question relates to the choice of a signal which permits the conclusion that some stability has returned. In short, the statistician must choose the tools, and specify the method to isolate the event, the frequency of observation and the signal of returned stability.

Measurement must also be made of changes in statistical policy which result in the substitution of direct survey data by that derived from administrative records. The choice here is somewhat less complicated because there is no need to isolate the effect. A methodology has been devised to permit subsampling of tax filers to formulate a relationship between the two data sources, direct survey and tax data. Use of the relationship permits the alignment of the two sets of data.

Under the regulatory framework, the current practice is to request data from holders of permits or licences to operate. This practice results in data which measures transportation activity, but not the transportation industry. The difference between the two is that the former may be found from operating entities of other industries. The SNA framework requires that business be classified as industries on the basis of rules which specify that it is the

majority activity that receives the classification. While this policy tends to overlook industries such as transportation which might be nested in other industries, it does permit the whole of the industrial composite to be classified.

At Statistics Canada, a major project is underway which will result in every business being represented in a single data base. When completed, this data base will permit a consistency of classification and of data which has to date not been possible. Current computer technology will provide such a vehicle and will also provide a facility to track the units and their associated data characteristics over time.

More and more businesses are able and willing to provide the data government requires in a machine readable form. This will change the collection procedures and will affect the quality, the timeliness and the quantity of data. Statisticians will have to devote their energies to the processing of vast amounts of data in a multitude of formats. The challenge will be to provide the user community with data which continues to improve in quality and timeliness and which is taken from a much larger data base.

Conditions of economic restraint have significant impact on the Transportation Statistical System. In fact, restraint will require that as solutions are found to the issues discussed in this paper, some efficient use of resources will result.

6.0 The Future of the Transportation Statistical System

The future of the Transportation Statistical System will be shaped by the issues which have been outlined above. It is felt that the future direction will follow the general direction dictated by the dual demands made on the system and that there will be a narrowing of the differences between the two.

Liberalization of industry regulations will have a far-reaching impact on the statistical system. In particular, those modes which are currently operating under a regulatory framework will be subject to the greatest change; a relaxation of their current burden. Economic regulation needs detailed data on such items as costing and pricing in order to plan, monitor and analyze the traffic and the utilization of the infrastructure. It is expected that there will be a reduction in economic regulation. This will result in a reduction of the current set of micro level statistics. There is also an expectation of changes in the mix of data required. This will be seen as a shift from micro to macro statistics and from an economic regulation use to uses related to monitoring, planning and analysis. The statistical system will change towards a system which displays a greater balance and which will support generalized analyses rather than detailed economic studies.

Changes to the regulatory environment will also have an impact on the way in which business is done. It is expected that the statisticians will be asked to measure the impact of changes to the regulatory system. The industry structure is expected to change; some of the changes will be abrupt and others will take some time to work themselves into the system. Disruptions to the data base will be inevitable. Users, however, expect that the statistical system will be capable of recording the changes so that they may be analyzed. Statisticians are not able to comment because they do not yet know what the requirements to monitor change might be.

Some of the time series may be lost, especially those which are dependent on the regulatory process. These losses will be compensated for by the initiation of new surveys, probably on a monthly basis, to produce timely data to measure changes.

If there are relaxations of the current Canada - US trade restrictions, the impact will be towards a shift in the movements of commodities and passengers using North-South services. Measurement of such a shift will present a new set of problems and a new dimension to the statistical system. These problems will range from the creation of surveys to capture this information to the creation of a legal framework which will permit acquisition of the data.

Conditions of economic restraint will have the effect of consolidating the statistical system. Rather than expansion of the current system to provide measurements of the changes as they occur, there will be a demand for the creation of a statistical system which will be generalized sufficiently to permit, at a relatively small marginal cost, responses to demands for more detailed regional studies or special micro studies. Within Statistics Canada, the new centralized register of businesses will be standardized in terms of definitions, concepts and framework. Studies using this system as a starting point will be able to move towards an integrated macro level transportation statistics program which will relate not only to other industries in the industrial composite but also to those of other countries.

Estimates will be required for industries (e.g. taxicabs) which are not currently part of the statistical system. New demands will have to be weighed against the erosion of available resources which follows from conditions of restraint.

The conditions of economic change and budgetary restraint and the resultant impact on response rates will force decision makers to establish new conditions of internal balances, changes to priorities and reallocation of resources. Greater effort towards standardization and integration between and among surveys will result. Evolution towards a Transportation Statistical System which is macro oriented and which is characterized by standard concepts and definitions will be the result.

Expectations are that there will be an increased usage of administrative data. In addition to the potential which exists from the use of income tax data, there is in transportation a wealth of data in machine readable form which has not yet been used. One example is the information which currently lies dormant in the provincial motor vehicle registration tapes. This data set has the potential to be used as a universe for surveys designed to determine the characteristics of the road transport mode, both freight and passenger. Such information when used in conjunction with the income tax data will provide new insights into the movements of commodities and people.

It is expected that as the evolution of the two frameworks continues, there will be an increased awareness of the potential uses of the data and a resulting narrowing of the gap between the "transport data" and the "economics data". Dependencies will emerge and will increase the extent that the two sets of data become interdependent.

There is no doubt that the statistician will face a greater challenge. The statistician will be required to devote an increasing proportion of time to the acquisition, analysis and management of data which does not today exist. Statisticians and users of the data will have to develop new skills in the selection of samples, the development of imputation techniques to account for missing or invalid data and the analysis of such data. The work will become more interesting, more complex and will provide a greater scope to the professional who is able to exercise creativity by bridging disciplines. The Transportation Statistical System will provide centralized knowledge, expertise and definitions which will result in a comprehensive body of information. As the use of such information increases, so will a demand for a body of senior officials in government and the private sector to assume the role of an advisory committee.

7.0 Closing

The next few years will see shifts in the data base. For the user who has become familiar with the intricacies of the current data base, there will be some difficulty experienced in linking back to past data and in the formulation of relationships between data elements. Nevertheless, it is expected that the new data base will be well founded.

The data base will be leaner because it is expected than the current conditions of fiscal restraint will continue. The expectation is that the Transportation Statistical System will contain a concise core of data on all modes supported by a consistent set of definitions and concepts. In addition, because the core data base will not be able to respond to all of the demands which are anticipated, it will have the capability to be used to support special enquiries for transportation data. This facility will permit satisfaction of demands for data in a fashion which will permit linkage of separate enquiries to each other and to the core data base.

Over the next several months it is expected that the forces of change affecting the data base will begin to solidify. During this phase, officers of the Transportation Division of Statistics Canada (the authors of this paper) will focus their attention on the demands of the users. A period of consultation with all of the users is underway. Please think over the concepts and the structure which has been outlined above. Match it to your needs and communicate the results to us as soon as possible.

ENDNOTE: The opinions expressed in this paper are those of the authors and do not necessarily reflect those of Statistics Canada.

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